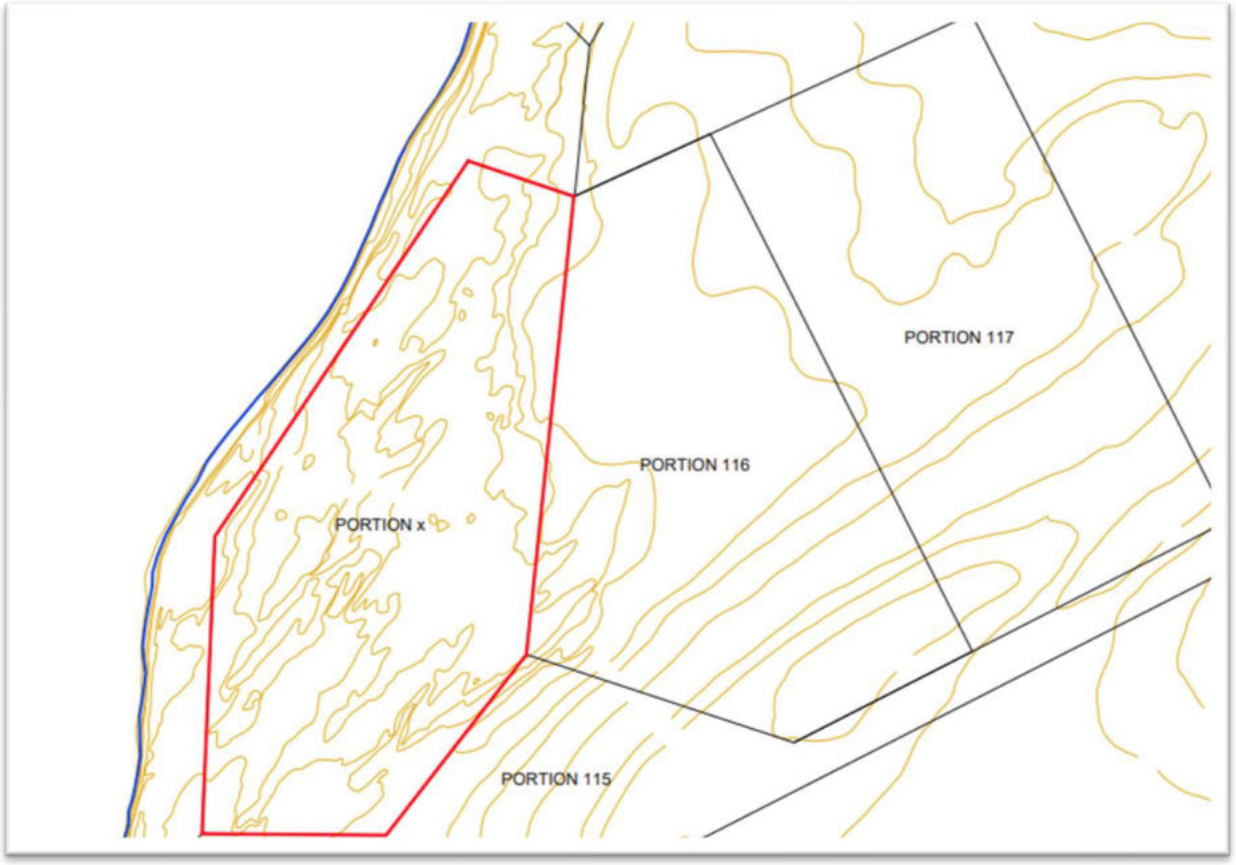
ENVIRONMENTAL MANAGEMENT PLAN (EMP)

FOR THE PROPOSED MIXED USE TOWNSHIP DEVELOPMENT ON PORTION 130 HENTIES BAY TOWNLAND NO. 133 HENTIES BAY TOWNLANDS (MEASURING 25 HECTARES)



Assessed

GMAC INVESTMENT

Proponent: Neral Investment CC
PO Box 61602 – Windhoek
Namibia

02 December 2022

Title	Environmental Management Plan (EMP) for the Proposed township Mixed Use Development on Portion 130 Henties Bay Townland No. 133 Henties Bay Townlands (Measuring 25 Hectares)
Environmental Practitioner	GMAC Investment cc
Reviewer	Mr. Kluivert Mwanangombe
Client	Neral investment cc
Status	Final Amended Environmental Management Plan (AEMP)
Issue Date	January 2023

TABLLE OF CONTENTS

1. INTRODUCTION

This document presents an Environmental Management Plan (EMP) to manage the proposed township mixed use development on portion 130 of the henties bay townland no. 133, the portion is zoned "Undertermined". The proposed location of the development is portion 130 of Henties Bay Townlands No. 133 situated adjacent Henties bay Extension 11 South west of Henties bay townland. The site is also located next to the newly proposed Luxury 5 Star Hotel which is yet to be constructed. The total area size will cover approximately 25 hectares.

Neral Investment cc is the proponent and developer that has proposed to establish and develop a mixed-use township development project. The project is on a 25 Hectares of Land and is nonexistence and not operational. The project site area is situated at Henties bay townland no. 133 on the South Dune, situated about +- 4 kilometres South of the town of Henties bay. The project site is vacant, zoned undetermined and an application for alienation by private treaty was approved by the Henties Bay Municipality and was subsequently recommended for approval to the Minister of Urban & Rural development.

The project's proposed business project Is estimated to cost N$ 50 million including land servicing and project Activities will include;

- construction of (280) two hundred houses, middle & high class,
- A luxury 3-star hotel with land scaping and parking spaces,
- A shopping Convenient mall comprising of several compartments and ablution facilities and office.
- Institutional land use and private hospital

Other basic services such as water and electricity services will be provided and established by NORED on the facility on the expense of the developer once the clearance is acquired. The site is associated with desert plants, both protected and unprotected plant. The site has no surface watercourse and no wildlife conservation area.

According to the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) (EMA) and the EIA Regulations (GN. No. 30 of 2012), an Environmental Management Plan (EMP) is required to obtain an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MET) for this type of operation to continue.

GMAC Investment Consultants cc has been appointed to draft an amended EMP as part of the application for an ECC. This amended EMP is to be implemented to mitigate the potential impacts of the Hotel development. The contents of this amended EMP will be binding on all parties who will have a role to play in the Site operations as stipulated in Sections 3 and will be liable for the rehabilitation measures recommended in Section 4.

1.1 PURPOSE THE EMP

The aim of an EMP is to ensure that the activities of the particular proposed development are conducted as per the requirements of the Namibian Environmental Management Act (No. 7 of 2007) and EIA regulations of 2012. The EMP provides a guideline on how the daily activities should be conducted and also provides a monitoring framework to ensure compliance against the recommended mitigation measures to avert any possible negative impacts.

The 2012 EIA Regulations defines a 'management plan' as: "…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated controlled and monitored."

1.1.1 EMP Requirements

Table 1.1 EMP Requirements as outlined in Section 8 of the EIA Regulations requirement

(j) a draft management plan, which includes –

(aa) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure;

(bb) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and

(cc) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.

1.1.2 Compliance to the EMP

Contents of this amended EMP are tailored in accordance with the prevailing EMA Act and the EIA Regulations. The aim is to provide appropriate management measures that would address the identified impacts that the project could bring about as stipulated in the Hotel development specifications. The remedial and mitigation measures recommended for rehabilitation (section 4) remain binding to all staffs and all employees. Adherence to the specifications identified herein is highly recommended throughout the lifespan of the facility.

It should be noted that the amended EMP shall not only be limited to the facility operations, but it encompasses the bigger picture. The document serves as the guiding tool to protecting the overall natural, bio-physical and socio-economic environment at large.

1.1.3 Proponent responsibility to the EMP

As the proponent, Neral Investment cc shall assume overall responsibility and implementation of the EMP. The development project Manager holds the mandate and sole responsibility of managing the daily operations and shall ensure that any other person (e.g., Casual Workers) is conversant with the contents of the EMP and adhere to the requirements. A copy of the EMP shall be kept at the Site premises and an induction should be conducted with all new employees prior to commencement of their responsibilities.

1.1.4 Possible adjustment to the EMP

The EMP should be considered as an open-ended document that can be updated or amended subject to new information. This EMP represent a full scope and version of the proposed mitigation measure for both construction and operational activities to be undertaken on Portion 130, where the development of land shall comprise of mixed land uses. The EMP is a flexible statutory report that allows for adjustments of project activities in the document as new information is made available and new mitigations where unforeseen environmental impacts arise.

2. PROJECT DESCRIPTION

2.1 Project Locality

Neral Investment cc proposed development project is located in within the Henties Bay Townland no. 133 southwest of the town. The site is situated adjacent to existing Henties bay Ext 11 called Sunbay. It is also situated next to Portion 127 earmaked for luxury 5 start hotel development. The project site is situated approximately +-150 to 100 meters above sea level. The site has a sea view, have an existing access well maintained salt gravel road with no access to services such as water, electricity and sewerage drainage system. The utility services shall be provided by the developer at his expense.

2.2 Industrial Process

The Project proponent (Neral Investment cc) intends to establish a township development on a unproclaimed and un-surveyed portion of land, Portion 130 situated on the Henties bay townland, townland no. 133 southwest of Henties bay. This development will comprise of different land uses, such as public open spaces, institutional land use (for schools, private hospitals), residential and business erven where shopping mall will be established.

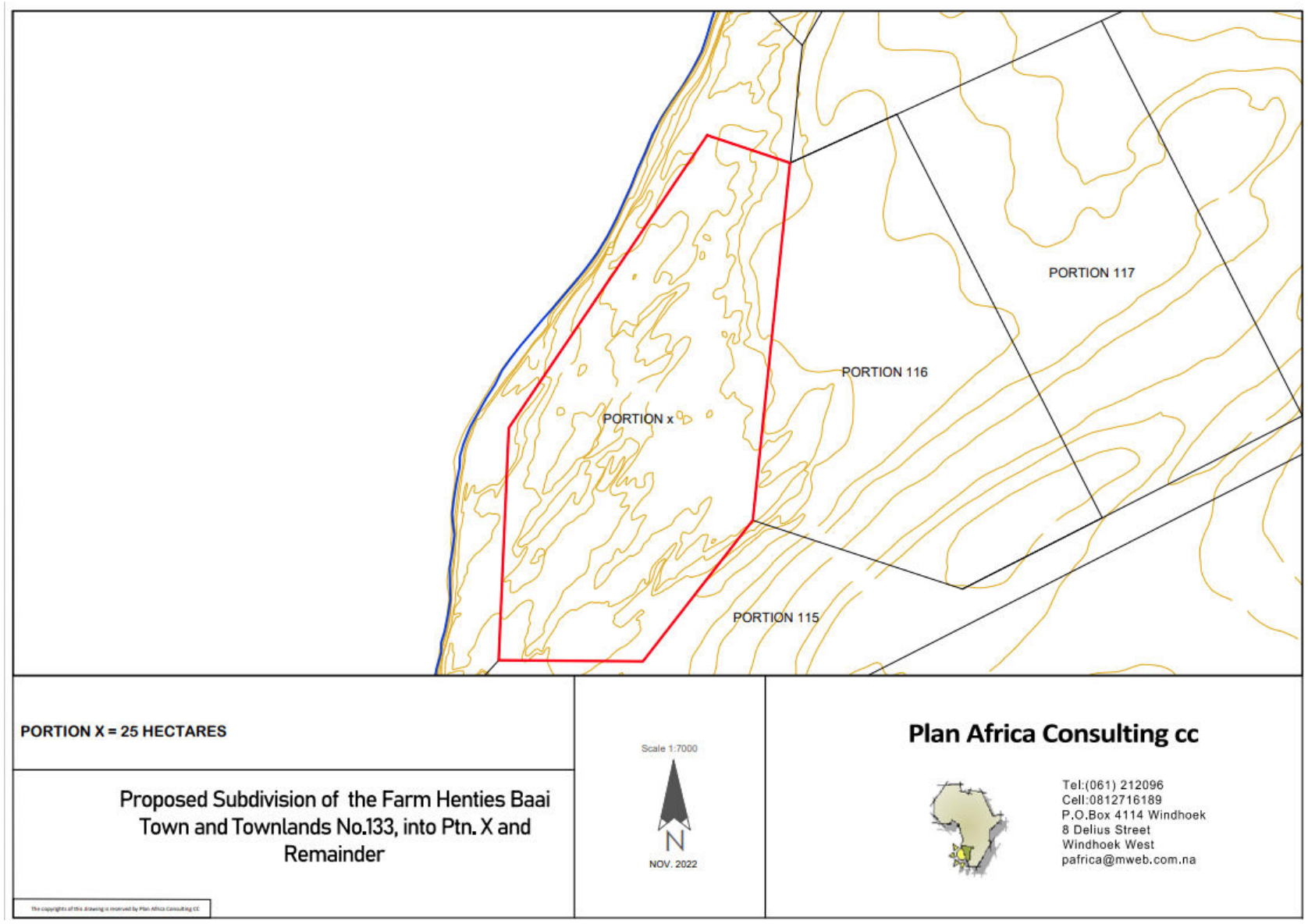
The project's proposed business project Is estimated to cost N$ 50 million including land servicing and project Activities will include;

- construction of (280) two hundred houses, middle & high class,
- A luxury 3-star hotel with land scaping and parking spaces,
- A shopping Convenient mall comprising of several compartments and ablution facilities and office.
- Institutional land use and private hospital

2.3 Infrastructure

Local and readily available building material for construction of temporal structures such as corrugated iron shed ranging and mobile toilets (for construction workers) will be used as a storage facility and for worker shed on the site. Henties bay local authority have made bulk provision for water connection points, electricity/power and sewer connection as part of the future sustainable growth and development of the town. The proponent will thus connect services or utilities from these bulk service through agreed rates and taxes by the municipality

Most existing bulk services exists and are situated few meters from the project area. The existing last township establishment in the South of Henties bay, called Henties bay Ext 11 has provision for these bulk services where proponents for Neral Investment will likely connect and or upgrade the existing bulk services to provide services to the newly proclaimed township



Surveying pegs and existing services on portion 127, Henties bay Townland No. 133

Namibia's economy is highly dependent on a healthy environment however, striking a balance in meeting demands for economic development while maintaining biological and social wellbeing may be a challenge. The current increase in infrastructure development in most Namibian towns has resulted in the high demand for construction material especially bricks.

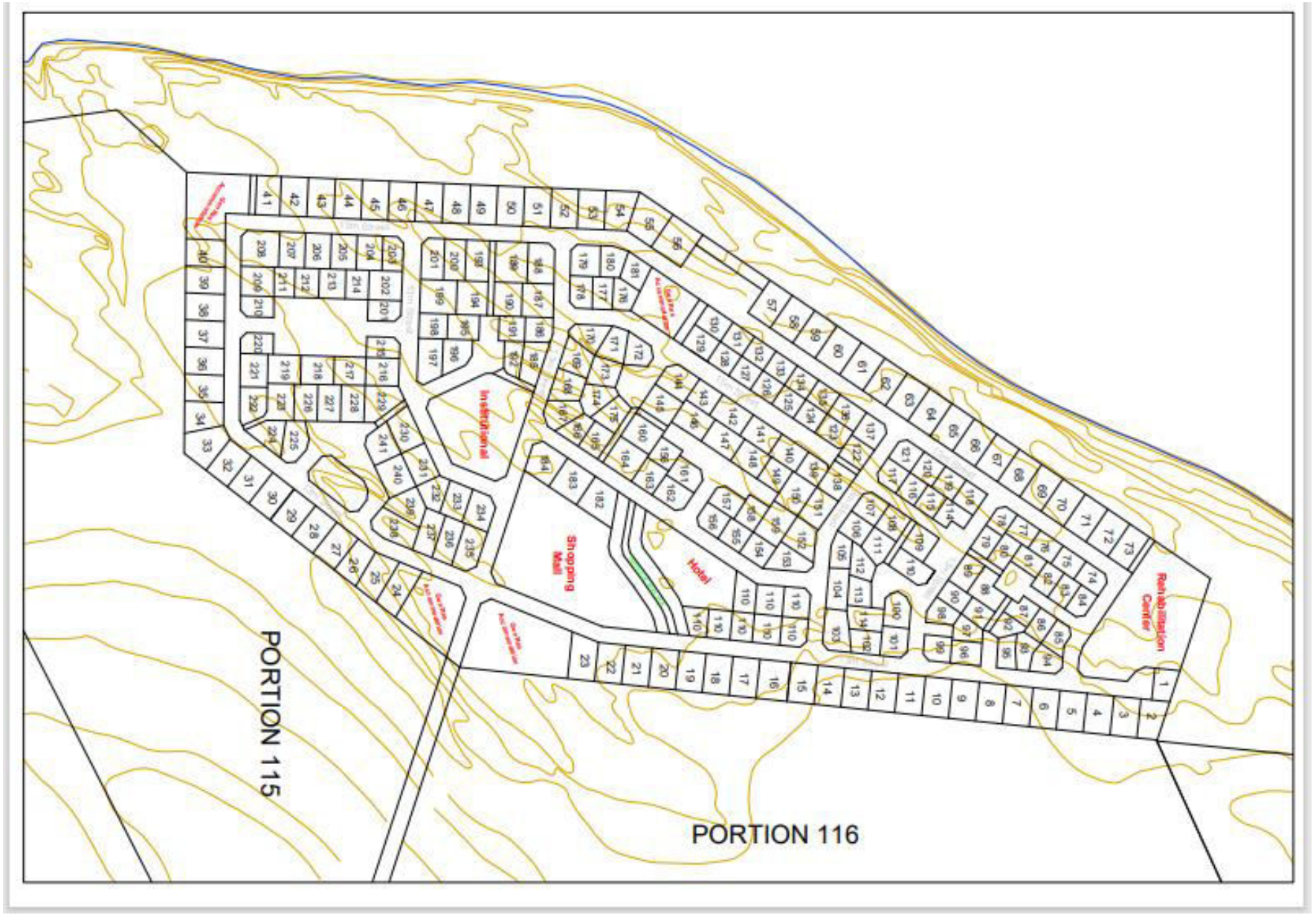
Environmentalists and development sectors should therefore work together and identify synergies to ensure that natural resources are utilized sustainably. Development takes place on land (in the environment) and hence the quest for economic development requires a trade-off with certain parts of the environment in-order for the development to be realized. Meaning, for development to take place, some part of the environment and or the surrounding communities could be affected. However, it is of utmost importance that such impacts are mitigated through effective implementation of the EMP.

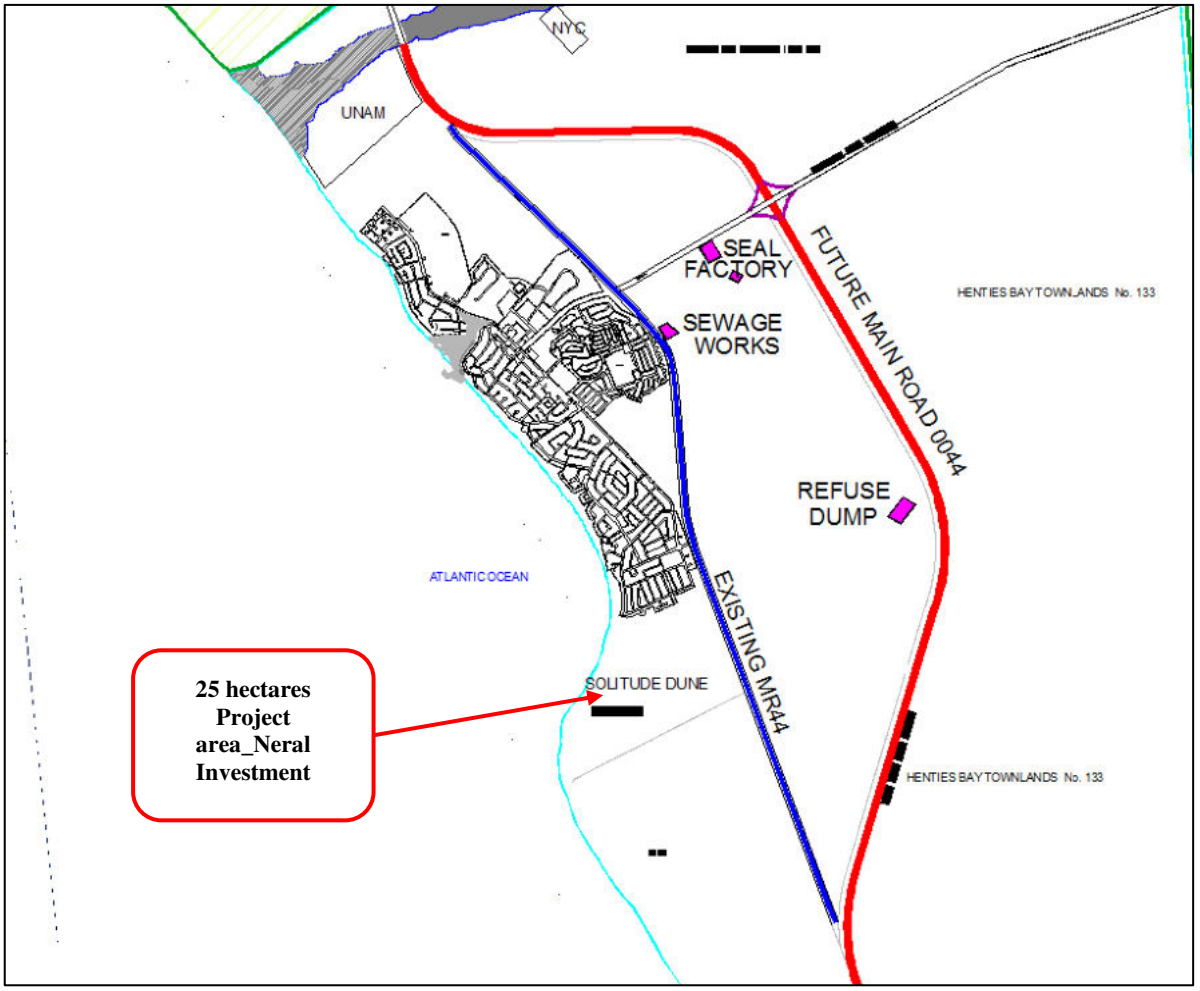
3. IMPACTS ASSOCIATED WITH THE SITE

3.1 Infrastructure development

The development of infrastructure on the national land without authorization as per EMA Act is an illegal practice that is punishable. The Environmental act lists infrastructure development as part of the listed activities that requires undertaking of Environmental Impact Assessment & Environmental Management Plan. Thankfully **Neral Investment cc** does not develop without following the right procedures However due to the nature of proposed project activities, as such a feasible Environmental Clearance Certificate should be obtained for compliance of the development.


PORTION 115
PORTION 116
Hotel


PORTION 115
PORTION 116
Shopping Mall
Hotel
Rehabilitation Center



4. ROLE PLAYERS & RESPONSIBILITIES

This section outlines the roles and responsibilities of the respective key personnel that would be responsible for effective implementation of the EMP.

4.1 Roles and responsibilities

Assigning responsibilities is necessary to ensure that key procedures are followed. The overall responsibility to ensure that the EMP is implemented rests with the Site Manager, who shall appoint a team of workers to undertake the actual work.

The Key role-players for the project implementation are:

a) An Environmental Compliance Officer (ECO) representing MET for environmental auditing and monitoring;

b) The Site Manager (or assigned representation by Neral Investment cc)

All instructions and official communications regarding environmental matters shall follow the organizational structure as determined by Neral Investment cc. The only exception to this rule would be in an emergency (defined as a situation requiring immediate action and where failure to intervene timeously would, result in unacceptable environmental degradation), where instructions may be given directly to any other Site personnel.

Project development Site Manager:

The Site /project Manager will be responsible for the overall daily operations at the township development activities and shall be responsible to adherence to the EMP throughout the project span. All team members shall be well-versed with the contents of this document. The following are some

key responsibilities;

Ensure that the works on-site are conducted in an environmentally sensitive manner and in accordance with the requirements of the EMP at all times. Special care shall be taken to prevent irreversible damage to the environment.

Ensure that all site staff are adequately informed of the requirements of the EMP pertaining to their site role, and that they have attended an environmental induction session (this session must be in the form of a talk and/or a written code of conduct that is clearly explained and understood by the team).

The Environmental Compliance Officer: ECO

The ECO in the context of this document refers to the party responsible for the environmental compliance and auditing activities required by the EMP for the lifecycle of the Site. The ECO shall be an independent environmental manager. The ECO shall have adequate environmental knowledge to understand the detailed environmental issues associated with the project, and is to be well versed in the contents of the EMP:

- The ECO shall undertake all monitoring and auditing activities to ensure compliance with the EMP.
- The ECO shall inspect the site at any suitable time during operation of the proposed Hotel.

- The ECO shall compile progress reports following any site inspections, Compliance Reports following any non-compliance, and a Closure report following the conclusion of hotel activities.
- The ECO shall liaise closely with the Site Manager and shall provide guidance on any environmental management issues, incidents or emergencies that are brought to their attention.
- The ECO shall assist in providing recommendations for remedial action in the event of any non- compliances.

4.2 Compliance with Requirements

Environmental management is not only concerned with the impacts on the environment, but also with how such operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations as well as the wellbeing of the immediate communities

The development of an amended EMP for a project is therefore an important and necessary task that is aimed at assigning responsibilities and mitigation options to a variety of activities. However, it can also be an ineffective tool in the absence of auditing or monitoring activities. Auditing or monitoring activities involve the structured observation, measurement, and evaluation of environmental data over a period of time.

4.2.1 Disciplinary Action

The EMP is a legally binding document. Non-compliance with the EMP shall result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to) financial penalties, legal action, fines and/or suspension of work. The disciplinary action shall be determined according to the nature of the non-compliance or crime, and exact penalties are to the discretion of MET according to the severity of the incident. Measures to be implemented by Neral Investment cc Limited with assistance of monitoring by the ECO are outlined in the Table 3-1 overleaf:1

5. ENVIORNMENTAL MANAGEMENT PLAN (EMP)

This Section discusses the various potential environmental impacts (positive and negative) associated with the proposed project and their relative significance. The types of impacts considered include:

- **Primary impacts:** - a primary impact is direct and occurs at the same time and place of action.
- **Secondary impacts:** - a secondary impact occurs later in time, or at a different place from the initial action
- **Cumulative impacts:** - cumulative impacts result from incremental impact of a proposed action on a common resource when added to the past, present and foreseeable future
- **Project legal and regulatory compliance:** this refers to demonstrated compliance with national and local environmental regulations and standards.

Possible conflicts:

An effort has been made to account for impacts during the initial site preparation, Construction stage and the operation stage.

Determination of Significance of Impacts:

Significance has been determined in terms of context and intensity of an action. Context refers to the geographical scale-local, national or global. Intensity is defined by the severity of the impact e.g., the magnitude of deviation from background conditions, the size of the area affected, the duration of the effect, violation of legal compliance and the overall likelihood of occurrence. Pollutant generation, transport and fate can affect the air, water, soil and the biodiversity in proximity to the proposed site. Pollutants and gases are typically transported by air but some maybe deposited on waters and soils. Liquid pollutants (e.g., fuels & Solvents) can evaporate into the air or be transported through soils, sediments, or aquatic media, such as ground water or surface streams.

Potential Environmental Impacts (Significant Impacts Only)

Activity	Environmental Aspect	Potential Environmental Impact

5.1.1 Potential Impacts on Air Resources:		
Site excavation and grading; and offloading of construction materials at the site	Dust	• Adverse Human health • Impaired visibility • Nuisance to neighbours
Site excavation and grading; and offloading of construction materials at the site	Noise	• Adverse Human health • Nuisance to neighbours
Site excavation and grading; and offloading of construction materials at the site	Emissions from construction equipment such as bulldozers, graders and compactors including: Particulates Carbon dioxide Carbon monoxide Sulphur oxides and Nitrogen oxides	• Adverse Human health • Greenhouse effect (global warming) • Acid rain • Smog
5.1.2 Potential Impacts on Water Resources:		
Site excavation and grading; and offloading of construction materials at the site	Spills of oil and other hazardous chemicals from construction equipment during construction	Ground water contamination through leaching
Washing Activities during construction & operation phases	Waste water	Contamination of surface water
5.1.3 Potential Impacts on Geological Resources:		
Site excavation and grading; and offloading of construction materials at the site	Oil, chemical and material spills	Soil contamination
Washing Activities during construction & operation phase	Waste water	Soil contamination
5.1.4 Potential Impacts on Biological Resources (Biodiversity):		
Excavation for laying of foundations for Mixed use development	Habitat for fauna	Loss of habitat
5.1.5 Potential Socio-Economic Impacts: **5.1.5.1 Land use:**		
Construction	Non- compliance with regulatory and legal requirements	Change of land use pattern

5.1.5.2 Economic Activity:		
General construction work	Hire of Casual labour	Employment creation to the local People
Use of sand	Sand harvesting by people in Henties bay town	Employment creation to people in Henties bay town. Depletion of natural resource
Use of cement	Manufacture of cement	• Improved business activity for cement manufacturers • Job creation • Depletion of natural resources\ harm to the environment
General operations	Hire of permanent and casual employees	Employment creation to the local people
Provision of Housing	The Namibian County meet its economic targets with increased office space and hotel beds that are currently insufficient for business travels in particular	Promotion of business opportunities in service sector
5.1.5.3 Transportation		
Construction activities	Delivery of building materials	• Job creation to drivers and turn boys • Emission of pollutant gases to atmosphere • Damage to access roads to the especially the feeder roads in Henties bay
5.1.5.4 Community Services		
On-site construction	Demand for water	Increase in demand for water from existing water supply network
Upon Completion	Demand for water	Increase in demand for water from existing water supply network
Ditto	Demand for Electricity	Increased supply of electricity
5.1.6 General Category		
Construction of the houses	Visual change (aesthetics)	With good design should be beautiful to look at
Upon Completion	General solid waste	Adverse human health

5.1.7 Health and Safety: 1. Construction Phase:		
Waste management	Site accumulation of waste e.g. of metal off-cuts and construction debris	• Injury to workers
Storage and handling of hazardous materials	Spills	• Adverse human health
Storage and handling of hazardous materials	Gaseous Emissions	• Adverse human health
Construction process	Noise	• Adverse human health
Hazardous material handling	Direct contact	• Adverse human health
Operating at high levels	Fall hazard	Loss of life
Construction process	Falling objects	Injury or loss of life
Solid waste management	Disposal of solid waste	Adverse human health
2. Operation phase		
Ditto	Fire	Loss of life and property
Ditto	Solid waste	• Adverse human health • Pollution of the environment
Ditto	Sewage	• Adverse human health • Pollution of the environment
Ditto	Waste water	• Adverse human health • Pollution of the environment
3. Decommissioning Phase		
Decommissioning	Same as for construction phase	Same as for construction phase

Note as follows:

Population and Housing:

Generally, Population changes have three key components viz:

- Primary population impacts - as a result of relocation of project workers and their families
- Secondary population impacts - as a result of relocation of workers and their dependants associated with project related expenditures in the region
- Natural increases (births minus deaths) and non-project related migration.

The construction phase of the project will engage builders, technicians and unskilled workers, some of whom the main contractor and the subcontractors will be required to pick and drop at the site.

Community Services:

The issues generally considered under this heading include:

- Projected changes in public school enrolment and the effect to student/teacher ratios and school capacity
- Expected changes in the demand for healthcare services
- Estimated changes in demand for utilities and effect on current capacity. An account of the potential impacts on the utilities has been provided above.

6. EIA EVALUATION METHOD

Before the project commences, an authorization is required from the Department of Environmental Affairs (DEA), Ministry of Environment and Tourism, in line with the Environmental Management Act of 2007 and the EIA Regulations No 30, 6 February 2012. Therefore, the proposed development is a listed activity and an EIA must be undertaken. The application for the Environmental Clearance Certificate (ECC) will be submitted to DEA. The following subheading describes what will be covered in the Scoping and Environmental Assessment.

The assessment criteria ensure that a comprehensive assessment of potential is undertaken in order to determine the overall impacts significance. The following criteria should be taken into consideration:

- The nature of impact i.e. positive, negative, direct, indirect;
- The extent and location of the impact;
- The duration of the impact i.e. short term, long term, intermittent or continuous;
- The magnitude/intensity of the impact occurring;
- The extent to which the impact can be reversed;
- The degree to which an impact may cause irreplaceable loss of a resource;
- The cumulative impacts;
- The mitigatory of potential impacts; and

- The significance of the impact on local, regional or global level.

Mitigation measures should subsequently be identified and recommended for all impacts to reduce the overall impact significantly to an acceptable level, where applicable. Mitigation measures should aim to address the following:

- More environmentally sound designs, concepts, layouts, technologies, etc., are investigated and implemented, if feasible;
- Environmental benefits of proposed activity are enhanced;
- Negative impacts are avoided, minimized or enhanced; and
- Residual negative impacts are within acceptable levels.

Table 1: Description of criteria used to evaluate potential impacts.

Significance Rating	LIST OF CRITERIA USED IN ASSIGNING A SPECIFIC RATING		
	INTENSITY	EXTENT	DURATION
High Significance	High	Regional	Medium Term
	High	National	Short Term
	High	Local	Long Term
	Medium	National	Medium Term
	Medium	Regional	Long Term
Medium Significance	High	Local	Medium Term
	High	Regional	Short Term
	Medium	National	Short Term
	Medium	Regional	Medium Term
	Medium	Local	Long Term
	Low	National	Medium Term
	Low	Regional	Long Term
Low Significance	Medium	Local	Medium Term
	Medium – High	Local	Short Term
	Medium	Regional	Short Term
	Low	National	Short Term

	Low	Regional	Medium Term
	Low	Local	Long Term
Very low Significance	Low	Local	Medium Term
	Low	Regional	Short Term
	Very low	Local	Short Term
Neutral/No impact	Zero intensity with any combination of extent and duration		

6.1 Potential Impacts during constructional stage

- Noise Pollution
- Dust
- Waste generation
- Ecological disturbance

Table 2: Potential impacts during constructional stage

Aspect	Type of Impact	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Noise	Nega-tive	1	1	2	1	M	L
Dust	Nega-tive	1	1	2	1	L	L
Waste	Nega-tive	1	1	0	1	M	L
Ecology	Nega-tive	1	1	2	1	L	L
Cumula-tive Impacts	Nega-tive	1	3	4	3	L	L

7. PROPOSED MITIGATION MEASURES

7.1 PROPOSED MITIGATION MEASURES (for Significant Negative Impacts Only):

7.1.1 Air Resources:

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Monitored Indicators
Site excavation, grading; and offloading of construction materials at the site	Dust	• Adverse Human health • Impaired visibility • Legal non-compliance • Nuisance to neighbours	Water the ground before excavation (if Any)	Before excavation by main contractor for civil works	• Complaints from neighbours • Visual observation
Site excavation, grading; and offloading of construction materials at the site	Emissions from construction equipment such as bulldozers, graders, concrete mixers and compactors including: ▪ Particulates ▪ Carbon dioxide ▪Carbon monoxide SOX and NOX	• Legal non - compliance • Adverse Human health • Greenhouse effect (global warming) • Acid rain • Smog	• Use of respirators by workers • Recondition engine exhaust systems • Engine tune-up to minimize emissions • Establish inspection program for equipment	Before excavation by main contractor for civil works	• Complaints from neighbours • Visual observation

Site excavation, grading; and offloading of construction materials at the site	Noise	• Adverse human health • Nuisance to neighbours	• Use of ear protectors by workers • engine tune up for machines • Establish inspection programme for equipment	Before excavation by main contractor for civil works	Complaints from the Neighbours • Records of machine inspection and reconditioning • Visual observation
7.1.2 Water Resources:					
Activity	**Environmental Aspect**	**Potential Environmental Impact**	**Mitigating Measures**	**Time Frame & Responsibility**	**Monitored Indicators**
Site excavation, grading; and offloading of construction materials at the site	Dust	Nuisance to neighbourhood	Water the ground	Main contractor before excavation	• Visual observation • Complaints from neighbours
Ditto	Spills of oil and other hazardous chemicals from construction equipment	• Ground water contamination through leaching • Legal non -compliance	• Spill prevention Procedures response plan • Water proofing of Concrete floor • Spill control kits • Training of staff	Main contractor— prior to construction	• A record of incidents • Visual observation • Records of staff training

Upon Completion	• Sewage disposal / overflow • Waste water disposal	Ground water contamination	• Sewage & waste water to be discharged to waste water treatment plant	• Site management	• Complaints from neighbours • Visual inspections • Blockage incidents
Ditto	Solid waste disposal	• Ground water contamination through leaching	• Provide suitable solid waste containers • Contract a licensed solid waste transporter	• Site management	• Complaints from neighbours • Waste tracking documents • A record of Incidents • Visual observations
7.1.3 Geological Resources:					
Activity	**Environmental Aspect**	**Potential Environmental Impact**	**Mitigating Measures**	**Time Frame & Responsibility**	**Monitored Indicators**
Site excavation, grading; and offloading of construction materials at the site	Oil, chemical and material spills	Soil contamination	• Spill control procedures • Training • Spill control kit	• Main contractor • During construction	• Spillage incidents • Training records • Visual observation
7.1.4 Biological Resources (Biodiversity):					

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Monitored Indicators
Excavation	Removal of soil and vegetation when laying foundations	Loss of vegetation and habitat to some animals (fauna)	Landscaping incorporating -Grass cover -Plants -Flowers -trees	Main contractor during construction	Visual observation

7.1.5 Socio-economic Activities

7.1.5.1 Land use:

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Monitored Indicators
Construction of the low density mixed use development	Non –compliance with regulatory and Legal requirements	Change of land use pattern	Comply with regulatory and legal requirements	• proponent • Main contractor • Structural Engineer	Approvals for development

7.1.5.2 Economic Activity:

All the significant impacts are positive. No mitigation measures are necessary.

7.1.5.3 Community Services:

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Monitored Indicators

Construction process	Water usage	Increased demand for water from the Nairobi water and sewerage Company	• Apply to Ministry of water and irrigation for permit for abstraction • Apply for temporary abstraction during construction • Implement Appropriate water conservation measures	Main Contractor and proponent prior to & during construction	• A record of Water consumption • Visual observation
Upon completion	Water usage	Demand for water from the Henties bay Nam Water and Sewerage Company	Ensure water conservation measures are implemented	Site management Upon completion and hand over	• A record of Water consumption • Visual observation
Construction process	Electricity usage	No Increased demand for electricity from the utility company is envisaged	• Apply to Regional Erongred for connection • Implement appropriate energy conservation measures	Main contractor–during construction	A record of electricity bills ▪ Visual observations
Upon Completion	Electricity usage	Increase Demand for Electricity for the hotel and commercial buildings	• Apply to Erongored to connect to Henties bay Town grid • Appropriate energy conservation measures	Site management during operation	A record of electricity bills ▪ Visual observations

			• Conduct annual energy audits • Leadership in Energy and Environmental Design certification		
7.1.5.4 Transportation:					
Activity	**Environmental Aspect**	**Potential Environmental Impact**	**Mitigating Measures**	**Time Frame & Responsibility**	**Monitored Indicators**
Construction activities	Transportation of construction materials to the site	Damage to roads	Grant access to the site from the Swakopmund henties bay C34 road All vehicles delivering Bulk materials to the site not to exceed recommended weight limit and comply with traffic rules	• Use of signage to control flow of traffic • During construction time • Main contractor is responsible	• Complaints from neighbours • Visual inspection
Upon Completion	Transportation of workers to work	Damage to roads	Grant access to the site from the Swakopmund henties bay C34 road All vehicles delivering Bulk materials to the site not to	Local authority should ensure regular maintenance of road	• Complaints from neighbours • Visual inspection

			exceed recommended weight limit and comply with traffic rules		
7.1.5.5 General Category:					
Activity	**Environmental Aspect**	**Potential Environmental Impact**	**Mitigating Measures**	**Time Frame & Responsibility**	**Monitored Indicators**
Construction at the site	Visual change	Aesthetic impact	Landscaping incorporating • Grass cover • Plants • Flowers	Main contractor during construction	Visual observation
7.1.5.6 Health & Safety:					
Activity	**Environmental Aspect**	**Potential Environmental Impact**	**Mitigating Measures**	**Time Frame & Responsibility**	**Monitored Indicators**
1. Construction Phase:					
Excavation, grading and concrete mixing	Dust	Adverse human health	• Legal compliance • Safety procedures • Personal protective equipment • Use of water sprays	Main contractor Prior to and during construction	Staff complaints Visual observations
Excavation, grading and concrete mixing	Noise	Adverse human health	• Personal protective Equipment • Ear protectors.	Main contractor Prior to and during construction	Staff complaints Visual observations

Storage and handling of hazardous materials (if any)	Spills	▪ Adverse human health ▪ Fire	Legal compliance ▪ Safety procedures ▪ Personal protective equipment ▪ Fire prevention plan ▪ Emergency response plan ▪ Fire equipment ▪ Fire training	Main contractor Prior to and during construction	Records of service & inspection • A record of incidents • Training records • Visual observations
Storage and handling of hazardous materials (if any)	Direct contact	Adverse human health	Personal protective equipment e.g. gloves, boots & overalls	Main contractor Prior to and during construction	A record of incidents • Staff sickness records • Visual observation
Storage and handling of hazardous materials (if any)	Emissions	Adverse human health	• Legal compliance • Safety procedures • Personal protective equipment e.g. Respirators • Containment of hazardous materials	▪ Main contractor ▪ Prior to and during construction	• Staff complaints • Visual observation
2. Operation Phase					
Upon completion of construction	Fire	Loss of life and property	• Fire prevention equipment to be provided • Equipment inspection & service program • Training of staff on fire management • Provide fire escapes • Label fire	Site management	▪ Inspection & service records ▪ Visual observation ▪ A record of incidents ▪ Training records

Upon completion of construction	Storm Water	Damage to roads and flooding of compounds in the area	• Liaise with Engineers to find a solution to storm water	Site Management Proponent	Visual observation
Upon completion of construction	Sewage disposal / overflow	• Waste water disposal • Ground water Contamination • Surface water contamination	Sewage & waste water to be channelled to Waste water management treatment plant	Monitor sewage lines to ensure there are no blockages or leaks	• Complaints from neighbours • Visual observation and inspections • Blockage incidents
Upon completion of construction	Solid waste disposal	▪ Ground water contamination through leaching	• Provide suitable solid waste Containers and Contract a licensed solid waste transporter • Encourage reuse and recycling of waste	Site management	• Implement a waste management plan tracking documents • Visual observations

7.2 Monitoring Plan

7.2.1 During Construction

Monitoring Issue	Parameter	Monitoring Method	Indicator	Frequency of Measurement	Responsibility
Air Emissions/ Ambient Air quality	Dust	Visual Inspection	Airborne particles	Continuous	Main contractor
	Engine exhaust smoke	Visual Inspection	Colour of exhaust smoke	Continuous	Main Contractor
Noise	Noise Level	Time averaged measurements in dB(A) at the site	Complaints and keep records of measurements	Continuous	Main
Waste Management	Amount of Solid waste produced	Tracking the volume of solid waste generated and establishing the storage, transport and disposal methods	Waste streams and volumes generated on site	Continuous	Contractor
	Hazardous Waste (if any)	Tracking all hazardous waste and establishing storage, handling and disposal methods	Generated quantities of: ▪ Used oil ▪ Waste paints	Continuous	Main

Health and Safety Occupational	Health and Safety monitoring	Reporting of accident and incidents, safety breaches and damage to equipment	Statistical records and safety reports	Continuous	Contractor
7.2.2 After Construction					
Monitoring Issue	**Parameter**	**Monitoring Method**	**Indicator**	**Frequency of Measurement**	**Responsibility**
Fire protection	Inspection of fire equipment	Review of Inspection records	Status of records	Semi annually	Site management
Waste Management	Solid waste	Tracking the volume of solid waste generated and establishing the treatment, storage, transport and disposal methods	Waste streams and volumes generated	Continuous	Site management
Health and Safety	Occupational Health and Safety monitoring	Reporting of accident and incidents, safety breaches and	Statistical records and safety reports	Continuous	Site management

		damage to equipment			
	Efficient use of re-sources	Consumption records of water, electricity and other resources	Financial savings in subsequent bills	Monthly	Site management
	Noise	Noise level measurements	Records of measurements & Incidents of loss of hearing ability	Annually	Site management
	Dust	Dust level measurements	Records of measurements	Semi-annually	Site management

8: ENVIRONMENTAL MANAGEMENT PLAN FOR PROJECT PHASES

Project Phase	Aspect	Action	Timeframe /Responsibility	Estimated Cost (N$)	Remarks
Construction phase	Fall Hazard during operation at high level	Provide safety harnesses and scaffolding	▪ Before and during construction by main contractor for civil works	30,000	Demonstrations should be carried out on safe use of resources and personal protective equipment
Construction phase	Falling objects from high level	Provide helmets	▪ Before and during construction by main contractor for civil works	20,000	Ditto
Construction phase	Dust	Water the ground before and during excavation	Before excavation by main contractor for civil works Contractor to deliver water to site	20,000	Ditto
Construction phase	Noise	▪ Use of ear protectors by workers ▪ Recondition engine exhaust systems ▪ Engine tune-up ▪ Establish inspection program for equipment	• Main contractor to provide the protective gear to the workers • Before excavation by main contractor for civil works	15,000	Ear plugs or mufflers may be used
Construction phase	Emissions	• Use of respirators by workers ▪ Recondition engine exhaust systems ▪ Engine tune-up ▪ Establish inspection	Ditto	15,000	The respirators should be Suitable for the type of Emission on site.

		program for equipment			
Construction phase	Sanitation	Provide temporary sanitary facilities	▪ Main contractor to provide the sanitary facilities to the workers ▪ Before excavation by main contractor for civil works	2,000	Toilet facility to be away from the river to avoid contamination of the river water
Construction phase	Wastewater & sewage discharge	Discharge to sewer	site management	nil	
Construction phase	Traffic that may lead to damage to roads by Heavy Commercial Vehicles	Provide access from the Swakopmund henties bay C34 gravel road	Contractor and Proponent and Roads Authority		
Construction phase	Storage and handling of Hazardous materials (if any)	• Obtain material safety data sheets for all hazardous materials and products handled at the site • Obtain personal protective equipment for the workers responsible for handling hazardous materials • Train the workers on safe handling procedures	Main contractor ▪ During construction	15,000 per annum	Only applicable if there is any hazardous materials brought to site. It is envisaged that this should be limited to paints
Construction phase	Accumulation of waste oil	Provide labelled on trainers for waste oil	Main contractor ▪ During construction	3000 per annum	Ensure proper storage of accumulated oil & minimize oil spills especially in view of the

					proximity of the river
Construction phase	Disposal of waste oil	▪ Identify a licensed contractor to recycle oil ▪ Appoint a licensed contractor to collect waste oil ▪ Adhere to spill control procedures when handling waste oil	Main contractor ▪ During construction	2,000 per month	Main contractor to confirm with EMA a list of licensed waste oil recyclers
Construction phase	Spill control	▪ Obtain spill control kit ▪ Train staff on spill control	Before excavation ▪ By main contractor	20,000 for spill kit and training	May need services of a consultant to train staff.
Construction and operational phases	Emergency response	(i) Keep a record of the public emergency service telephone numbers including: ▪ Police ▪ Fire brigade ▪ Ambulance services (ii) Document an emergency response procedure (iii) Train staff on emergency response	Main contractor and site management ▪ During construction and operation phases	10,000 per group of trainees	May need services of a consultant to train staff.
Construction and operational phases	Compliance with legal and Regulatory requirements	Refer to relevant policy, legal and administrative framework and comply	Ditto	450,000	Check the EMA website once every month
Construction and operational phases	Environmental Audits	To be carried out against the Environmental Management Plan and the mitigation plan in this report	site management	60,000 per annum	Once a year. To be carried out once a year or as advised by EMA

Occupancy (Operation) Phase)	Fire protection	Ensure fire fighting equipment is inspected semi annually	Site management ▪ During operation phase	10,000 per visit	Fire equipment suppliers
Operation Phase	Traffic flow as a result of development	Conduct a traffic survey to compare the traffic flows before and after development	Proponent	250,000	Engage expert to carry out survey
Operation Phase	Disposal of solid waste	Appoint a licensed Waste transporter	Site management Prior and during operation phase	5,000 per month	Site management to confirm with EMA licensed waste transporters
Operation Phase	Use of equipment subject to statutory inspection	Statutory Inspection		50,000 per annum	Ditto
Operation Phase	Noise	Noise level measurements	Ditto	5,000 per annum	Engage consultant
Operation Phase	Erosion	Site landscaping and planting of tree belts to prevent soil erosion and to reduce wind velocity		100,000	

This environmental management plan may not be exhaustive. However, the project proponent is at liberty to make any improvements that may result in mitigating the identified environmental impacts

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GMAC Investment cc
Environmental and Management Consultant